Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

reinforcing the need for continuous measures to contain SARS-CoV-2 spread, despite growing pandemic fatigue in the population,[5] and to avoid potentially catastrophic COVID-19-related hospitalisations and deaths in the critical months ahead.

We declare no competing interests.

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Long COVID: tackling a multifaceted condition requires a multidisciplinary approach

In their Comment,[1] Dana Yelin and colleagues highlight the persistent, heterogeneous, and recurring symptoms of long COVID. A *Lancet* Editorial[2] asks for better research and care to avoid years of struggle for individuals with long COVID. We write following an international, multistakeholder forum, in which peoples' voices were central, to expand the call to action and to identify how we can prevent long COVID from becoming the long-lasting legacy of COVID-19.

On Dec 9–10, 2020, the International Severe Acute Respiratory and Emerging Infection Consortium (ISARIC), the Global Research Collaboration for Infectious Disease Preparedness (GloPID-R) research funders group, and Long COVID Support, a global patient group, held the Long COVID Forum (appendix pp 1–2). We brought together people living with long COVID, interdisciplinary researchers, funders, public health experts, and policy makers, including WHO, in a global public forum to identify research gaps to inform urgent long COVID research and support priorities.

Our discussions, introduced by WHO Director-General Tedros Adhanom Ghebreyesus, were built around three people-centred themes, identified by long COVID support groups: recognition, research, and rehabilitation. We heard from people living with long COVID from around the world, who asked: what is causing my illness? What can I do to recover? Why do I have long COVID when others recover quickly? How do I convince my doctor that what I am suffering from is real? How can others be prevented from getting long COVID? We explored existing evidence,[3] including the recently funded research portfolio on long COVID that will contribute to the evidence body in the short to mid-term[4] and updates from ongoing research from around the world. A complex, multifaceted condition involving a range of physical, cognitive, and psychological symptoms was described, affecting adults and children in different settings, with occupational, economic, and social implications. Such complexity requires a multidisciplinary, globally coordinated approach that supports harmonised, large-scale studies that have the power to provide robust evidence to inform policy and patient-centred care and support to improve long COVID outcomes.

The structure of the forum facilitated the identification of research gaps (appendix p 3). The core message was the need to expand research beyond hospitalised patients to include those who experienced COVID-19 in the community, children, vulnerable communities, and resource-constrained populations to improve equity in access to research and reduce health inequalities.

CH is living with long COVID and is a founder of the Long Covid Support Group. JCS reports experiencing persisting symptoms of COVID-19, following suspected COVID-19 in March, 2020. All other authors declare no competing interests.

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See **Online** for appendix

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CovMT: an interactive SARS-CoV-2 mutation tracker, with a focus on critical variants

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The number of confirmed SARS-CoV-2 cases worldwide has now reached around 100 million, with 2·1 million reported deaths[1] and more than 450 000 SARS-CoV-2 genomes already sequenced. It is vital to keep track of mutations in the genome of SARS-CoV-2, especially in the spike protein's receptor binding domain (RBD) region, which could potentially impact disease severity and treatment strategies.[2–4] In the wake of a recent increase in cases with a more infective variant featuring an RBD mutation (N501Y, B.1.1.7) in the UK, countries worldwide are concerned about the spread of this or similar variants. Increasing sequencing efforts and user-friendly mutation tracking systems are needed for timely tracking of SARS-CoV-2 variants.

We developed a COVID-19 virus mutation tracker system (CovMT; appendix) based on SARS-CoV-2 isolate genomes deposited to GISAID to track the worldwide sequencing efforts and the evolution of the mutational landscape of this virus. CovMT, which is updated daily, summarises mutations from more than 450 000 isolates into groups of generic virus clades, lineages, and more specific mutation sets we call mutation fingerprints. These summaries, with metadata of location, date of sampling, and patient disease severity information, when available, at the continent and country levels, are accessible from the main page of the CovMT system (appendix).

For **CovMT** see https://www.cbrc.kaust.edu.sa/covmt

See **Online** for appendix

For **GISAID** see http://gisaid.org

CovMT also provides a timeline history of SARS-CoV-2 variants related to mutations in the RBD region of the spike protein. As of the end of January, 2021, the spread of N501Y, B.1.1.7 variants has been detected in SARS-CoV-2 isolate genomes from nearly 60 additional countries using CovMT (appendix). Nonsynonymous mutations in the RBD region have a high potential to be linked to increased binding efficiency, increased infectivity, and the potential to evade antibodies.[2–4] To track all similar variants, we ranked mutations in the RBD region based on their appearance in the number of isolate genomes in CovMT. The CovMT timeline (appendix) shows that N501Y, S477N, N439K, and L452R mutations can now be detected in more than 41 700, 23 300, 9700, and 2000 isolates, respectively. An important RBD mutation, E484K, which probably allows the virus to evade existing antibodies,[5] was originally recorded in Denmark during March, 2020, and is now on the rise in South Africa[5] since October, 2020. More than 510 isolates show triple mutations (K417N, E484K, and N501Y, lineage B.1.351) in South Africa, with some isolates now detected in the UK and 22 other countries. We observed that the UK variant (B.1.1.7) has also acquired the E484K mutation (appendix). A more recent variant, P.1, with E484K and N501Y RBD mutations, appeared in four travellers arriving in Japan from Brazil on Jan 2, 2021. The P.1 variant now appears in six other countries. Timelines and lineage history of each of the top ten most common RBD mutations can be explored at CovMT.

With a particular focus on critical mutations in the RBD region of the spike protein, and with an option to seamlessly accrue the clinical metadata, including disease severity, we believe that CovMT will be useful for scientists, the general public, and authorities to explore country-specific information.

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Estimates of anti-SARS-CoV-2 antibody seroprevalence in Iran

Iran was among the first countries outside China to report a large outbreak of COVID-19, but the transmission dynamics across the country have largely remained unknown due to the scarcity of serological, epidemiological, and genomic data. One of the main barriers